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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,631	06/26/2006	Thomas Gessner	292331US0PCT	6111
22850 7590 09/24/2010 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER MCDOWELL, BRIANE				
ART UNIT		PAPER NUMBER		
1624				
NOTIFICATION DATE		DELIVERY MODE		
09/24/2010		ELECTRONIC		

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS GESSNER and SOPHIA EBERT

Appeal 2010-007368
Application 10/584,631
Technology Center 1600

Before DONALD E. ADAMS, LORA M. GREEN, and
STEPHEN WALSH, *Administrative Patent Judges*.

WALSH, *Administrative Patent Judge*.

DECISION ON APPEAL¹

This is an appeal under 35 U.S.C. § 134(a) involving claims to a process for preparing metal-free phthalocyanine. The Patent Examiner

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

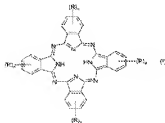
rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b).
We affirm.

STATEMENT OF THE CASE

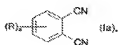
The invention concerns a process of converting an ortho-phthalodinitrile to a metal-free phthalocyanine in the presence of an alkali metal hydroxide. (Spec. p. 1, ll. 5-24).

Claims 1-9 and 11-17 are on appeal.² Claim 1 is representative and reads as follows:

1. A process for the preparation of a metal-free phthalocyanine of formula I



the process comprising,
converting an ortho-phthalodinitrile of formula Ia



to the metal-free phthalocyanine of formula I in an inert solvent with a boiling point of at least 120°C (at standard pressure) in the presence of ammonia and an alkali metal hydroxide,

wherein, in formula I or Ia, the variable n can adopt values of 1, 2, 3 or 4,

wherein in formula I or Ia, the R radicals denote a five- or six-membered saturated heterocyclic ring comprising nitrogen,

² We note from the Examiner's Answer that claim 10 is pending but does not appear to be subject to a ground of rejection. (See Ans. 12-13).

wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen is bonded via a ring nitrogen atom to the benzene ring, wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen can, optionally, comprise one or two additional nitrogen atoms or an additional oxygen or sulfur atom, and wherein the five- or six-membered saturated heterocyclic ring comprising nitrogen can be, optionally, substituted by one or two C₁-C₈-alkyl groups.

The Examiner rejected the claims as follows:

- claims 1-8 and 11-17 under 35 U.S.C. § 103(a) as unpatentable over Branch³ and Tamura,⁴ and Paidi;⁵ and
- claims 8 and 9 under 35 U.S.C. § 103(a) as unpatentable over Branch, Tamura, Paidi, and Rintelman.⁶

Claims 2-9 and 11-17 have not been argued separately and therefore stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

OBVIOUSNESS

The Issue

The Examiner's position is Brach disclosed "a similar process to that of the claimed invention for preparing unsubstituted or substituted metal-free phthalocyanines." (Ans. 5). The Examiner found that Brach taught that

³ Paul J. Brach et al., *Improved Synthesis of Metal-free Phthalocyanines*, 7 HETEROCYCLIC CHEM., 1403-1405 (1970).

⁴ Patent Application Publication No. EP 0663427 A3 by Shinichi Tamura et al., published Jul. 19, 1995.

⁵ Patent Application Publication No. JP 2003040892 A by Paidi et al., published Feb. 13, 2003.

⁶ US Patent No. 2,485,168 issued to William L. Rintelman, Oct. 18, 1949.

metal-free phthalocyanines are prepared by heating a phthalodinitrile and ammonia in an inert organic solvent with a boiling point of at least 120° C. (*Id.*). However, the Examiner found that Brach did not disclose incorporating an alkali metal hydroxide in its process. (*Id.*).

The Examiner found that Tamura disclosed a method of synthesizing high purity metal-free phthalocyanines wherein partially hydrogenated alkali metal phthalocyanines are obtained by heating a phthalodinitrile in an inert organic solvent in the presence of amines such as ammonia and an alkali metal source such as sodium or potassium hydroxide. (*Id.*). The Examiner also found that Tamura disclosed that the phthalocyanines are subsequently contacted with a hydrogen-substituting agent such as methanol or water to provide the metal-free compound. (*Id.*). Additionally, the Examiner found that Tamura taught that “if the reaction was carried out under conditions wherein the phthalocyanine was partially metallated (due to the presence of the alkali metal), a rapid equilibrium existed which resulted in the dissolution of unwanted impurities; affording high purity phthalocyanines.” (*Id.* at 6). The Examiner also found that Tamura disclosed ultimately obtaining a high yield of the metal-free phthalocyanines, e.g., >90%. (*Id.*).

The Examiner found that Paidi taught the preparation of ruthenium phthalocyanines containing 6-membered heterocycles. (Non-Final Rej. 4).

Based upon these disclosures, the Examiner determined that a person of ordinary skill in the art at the time the invention was made would have found it obvious and would have been motivated to modify Brach’s process by introducing an alkali metal hydroxide into the process with a reasonable expectation of successfully achieving an improved process for the synthesis of high purity unsubstituted or substituted phthalocyanines. (Ans. 6). The

Examiner relied upon Paidi to evidence that attachment of a 5 or 6 membered saturated heterocycle to a phthalocyanine ring was known at the time of the invention. (Non-Final Rej. 6).

Appellants challenge the Examiner's combination of Brach and Tamura by asserting that (a) there is no motivation to combine the references, (b) Tamura taught away from the combination, and (c) the Examiner relied upon impermissible hindsight in combining the references. (App. Br. 5). Specifically, Appellants argue that Tamura's "dealkalizing agent [] is a necessary component in the process of Tamura and thus, may not be dispensed with in order to obtain Tamura's et al.'s metal free phthalocyanine." (App. Br. 6). According to Appellants, if Tamura is combined with Brach, then "all required elements of Tamura et al. must be combined with Brach et al., as opposed to merely selecting individual components such as Tamura's et al.'s [alkali metal component]." (*Id.*).

Appellants assert that this deficiency is not cured by Paidi or Rintelman. (*Id.*) Further, Appellants assert that combining Tamura and Paidi "is problematic" because Paidi is concerned with metal, i.e., ruthenium, phthalocyanines while Tamura is concerned with metal-free phthalocyanines. (*Id.* at 7). According to Appellants, "it is well known to a person of ordinary skill in the art that the synthesis of metal-free phthalocyanine[e]s is often different from the synthesis of metal containing phthalocyanin[e]s." (*Id.*).

The issue with respect to this rejection is whether the record supports the Examiner's conclusion that the cited references would have made the claimed process obvious.

Findings of Fact

1. We agree with the Examiner's explicit findings regarding the scope and content of the prior art references. (*See* Ans. 3-7; Non-Fin. Rej. 3-7).

Principles of Law

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Analysis

We are not persuaded by Appellants' contention that the combination of Brach and Tamura was improper as the basis for this contention is not supported by the record. Appellants challenge the Examiner's combination by asserting that it fails to include Tamura's use of a dealkalyzing agent. (*See* App. Br. 6). However, as the Examiner explained (*see* Ans. 7) the combination does include this step, which both Brach and Tamura disclosed. Appellants do not dispute that Brach disclosed using a dealkalyzing agent. Therefore, we do not find that Appellants have established that the combination of Brach and Tamura was improper. We find the Examiner's reasoning was in compliance with obviousness precedent. *See KSR*, 550 U.S. at 416.

Further, to the extent that Appellants challenge the inclusion of Paidi in the combination, we are unpersuaded. The Examiner's combination did not include any processing step disclosed in Paidi. (*See* Fin. Rej. 6). Rather, the Examiner relied upon Paidi merely to evidence that attaching a 5 or 6 membered saturated heterocycle to a phthalocyanine ring was known in the

art at the time of the invention. (*Id.*). Therefore, we find that Appellants' assertion that the "synthesis" of metal-free phthalocyanines is "often different" from the synthesis of metal phthalocyanine (App. Br. 7) is misdirected.

Accordingly, we affirm the Examiner's obviousness rejections.

CONCLUSION OF LAW

The record supports the Examiner's conclusion that the cited references would have made the claimed process obvious.

SUMMARY

We affirm the rejection of claims 1-8 and 11-17 under 35 U.S.C. § 103(a) as unpatentable over Branch, Tamura, and Paidi; and we affirm the rejection of claims 8 and 9 under 35 U.S.C. § 103(a) as unpatentable over Branch, Tamura, Paidi, and Rintelman.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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Appeal 2010-007368
Application 10/584,631

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